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Psychological Bulletin

CONTENTS

Proceedings of the Twelfth Annual Meeting of the Southern Society for Philosophy and Psychology: L. R. Geissler, 145.

General Reviews and Summaries:

Hearing: R. M. Ogden, 159. *Affective Phenomena—Experimental:* J. F. Shepard, 164. *Affective Phenomena—Descriptive and Theoretical:* H. N. Gardiner, 166. *Attention and Interest:* W. B. Pillsbury, 169. *Psychophysical Measurement Methods:* S. W. Fernberger, 170. *Correlation:* J. B. Miner, 176.

Special Reviews:

Adams's Advertising: C. E. Ragsdale, 185. *Miller's Musical Sounds:* R. M. Ogden, 186. *Analyzing Yourself:* M. W. Calkins, 188. *Maeder's Dream Problem:* E. P. Frost, 188. *Healy's Honesty:* H. B. Hubbert, 189.

Books Received, 191. *Notes and News*, 191.

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Vol. XIV. No. 5. May 15, 1917

THE

PSYCHOLOGICAL BULLETIN

PROCEEDINGS OF THE TWELFTH ANNUAL MEETING OF THE SOUTHERN SOCIETY FOR PHILOSOPHY AND PSYCHOLOGY, LYNCHBURG, VIRGINIA, APRIL 12 AND 13, 1917

REPORT OF THE RETIRING SECRETARY, L. R. GEISSLER, CLARK UNIVERSITY

The twelfth annual meeting of the Society was held at Randolph Macon Woman's College, Lynchburg, Virginia, Thursday and Friday, April 12 and 13, 1917. The afternoon session of the first day was followed by an automobile ride through the city and its beautiful surroundings provided most graciously by the Lynchburg Chamber of Commerce. In the evening of the same day a banquet was held at the Virginian Hotel which was followed by the president's address, entitled "Education for Democracy." An important business meeting preceded the afternoon session of the second day. In the evening the society joined with a gathering of physical directors of women's colleges and the faculty and student-body of the college to hear an address by Professor Knight Dunlap on "Criteria of Male and Female Beauty" and by Dr. R. S. Carroll of Asheville, N. C., on "The Reëducation of the Nervous," which was followed by a reception in honor of the two visiting organizations rendered by the president and faculty of the college. In every respect the meeting was most successful and clearly demonstrated the advisability of holding future meetings in the spring-time and at some southern institution of learning.

At the business meeting on Friday afternoon the following items were passed upon:

1. A cordial invitation from President Payne and Professor Strong, to hold the next annual meeting at the George Peabody College for Teachers, Nashville, Tenn., was gratefully accepted.

2. That part of the proposed amendment to the constitution referring to section 1, Article 1, and involving a change in the name of the organization was defeated; but the second part, referring to section 2 of Article 1 and adding the words "Experimental Education" to the scope of the society was adopted.

3. The following resolutions were unanimously adopted: (*a*) "Resolved that the president and faculty of Randolph Macon Woman's College and the Chamber of Commerce of the city of Lynchburg be asked to accept the sincerest appreciation of the Southern Society for Philosophy and Psychology for the cordial hospitality which they have extended us during our meetings at the college and our stay in the city." (*b*) "Resolved that the thanks of the Southern Society for Philosophy and Psychology be tendered to the retiring president and secretary for their earnest labor in arranging for the present meeting and building up the society during their term of office." (*c*) "Resolved that the members of the Southern Society for Philosophy and Psychology assembled at Lynchburg, Virginia, assure the President of the United States of their loyal support in the present national emergency."

4. The following officers were elected: President, Professor E. K. Strong, Jr., Nashville, Tenn.; Vice-president, Dr. T. V. Moore, Washington, D. C.; Secretary-Treasurer, Professor W. H. Chase, Chapel Hill, N. C.; member of the Council for two years, in place of Dr. E. E. Rall, resigned, Dr. Tom A. Williams, Washington, D. C.; members for three years, Professors E. B. Crooks, Lynchburg, Va., and Knight Dunlap, Baltimore, Md.

5. The following were elected to membership: Prof. A. G. A. Balz, University of Virginia; Miss Ethel Bowman, Clark University; Mr. T. W. Brockbank, Catholic University of America; Brother Antoninus, C.F.X., Catholic University of America; Prof. A. S. Edwards, University of Georgia; Prof. S. C. Garrison, Durham, N. C.; Prof. Thomas R. Garth, Richmond, Va.; Prof. Alfred L. Hall-Quest, University of Virginia; Prof. Wm. H. Heck, University of Virginia; Prof. J. A. Highsmith, State Normal College, Greensboro, N. C.; Prof. J. H. Johnston, University of North Carolina; Miss Grace Lyman, Woman's College of Alabama, Montgomery, Ala.; Prof. Charles G. Maphis, University of Virginia; Prof. Wilbur H. Norcross, Dickinson College, Carlisle, Pa.; Mr. Wm. R. Smithey, University of Wisconsin; and Prof. H. D. Williams, Brenau College, Gainesville, Ga.; and Prof. L. A. Williams, University of North Carolina.

6. The accounts of the retiring Treasurer were audited by a Committee and showed a balance on hand, April 13, 1917, of $93.69.

L. R. GEISSLER,
Secretary-Treasurer

WORCESTER, MASS.

TITLES AND ABSTRACTS OF PAPERS

Education for Democracy. D. S. HILL, University of Wisconsin.

The Significance of Beauty. KNIGHT DUNLAP, Johns Hopkins University.

Beauty in the human individual is taken from the realm of the ornamental and shown to be something which is vital for the welfare and progress of the race. The individual and racial characters which enter into the complex of beauty are discriminated and the particular significance of the several individual factors pointed out. Finally, the interrelation of these factors and their reference to the paramount potentiality of the individual is shown.

The Nature of Mental Functions. L. R. GEISSLER, Clark University.

The main conclusions of this paper may be summarized under the following five heads: (1) The distinction between mental structure and mental function is due to two different ways of looking at the same experience or mental phenomenon, in one case describing the number, nature, attributes, quantitative laws and limits, and the changes involved in mental processes considered as separate existences, in the other case designating relations occurring among them or between them and non-mental phenomena or else indicating mental activities by an emphasis upon the results accomplished through the structural changes. (2) One of the important problems of a systematic functional psychology is to work out experimental methods and a consistent terminology for the study of mental functions, activities, and relations, and to determine to what extent introspection from a functional standpoint is possible and adequate. (3) Introspection functionally applied seems perfectly adequate for the designation of intrinsic mental relations, but in the case of extrinsic relations and of mental activities it must be supplemented by other methods. (4) For the sake of greater psychological accuracy in introspection it is desirable to adhere strictly either to the one or to the other point of view for a time

being, and not to combine the two, in order to avoid confusions and conflicts such as seem to have resulted from a combination of the two standpoints in the case of imageless thought, relational elements, and the distinction of act and content. (5) A change in standpoint involves, psychologically considered, a change in attitude and in task, which set up a given set of determining tendencies in accordance with which different aspects of the same phenomenon under observation are temporarily disregarded while others are similarly emphasized.

Perception as a Function of Time and Quantity to be Perceived. BROTHER ANTONINUS, C.F.X., Catholic University of America.

It is stated that only a few impressions—four to six printed letters—can be grasped in a single act of perception. But even with a short exposure, one cannot exclude the possibility that the judgment is based upon the subject's memory of the stimulus and so does not really afford us any information about the "span" of consciousness.

I undertook the following experiment for the purpose of determining the relation of the time of perception to amount perceived: Dots, from one to ten, were arranged in haphazard order, within the area of a two-centimeter circle, on cards. At the instant of exposure the chronoscope was started. When the subject was certain of the number of dots exposed he pronounced the name of that number and so stopped the chronoscope. In order to prevent the subject from becoming familiar with the groupings, thirty cards for each number of dots were prepared. After the first presentation the cards were inverted, thus giving a new arrangement to the dots. The average time of perception was then calculated. This time I shall call the time of perception and naming. A second experiment was performed, in which the subject reacted to printed numbers in order to the time required for simply naming the numbers. This time was subtracted from the time for perception and naming, giving the time of perception.

A number of interfering factors disturb the simple process of perception above six. The larger numbers are broken up into groups and some difficulty is experienced by subjects in attempting to keep these groups apart; and, some combinations are very perplexing and there is a tendency to guess rather than to actually perceive the number of dots.

T. B. Robertson gives a formula for auto-catalytic reaction,

which he states may be applied to mental phenomena and the curve of memory has already been found to follow this law. At first I applied to the curve of perception Robertson's formula, which does not apply to the results obtained, but, if the variables are interchanged the curve of the new formula approximates the observed curve of perception. This seems to indicate that perception can be given a physiological basis. At any rate, it is worthy of note, that two things, psychologically opposites, follow the same law when the variables are reversed.

A Southern Philosopher. E. B. CROOKS, Randolph Macon Woman's College.

Albert Taylor Bledsoe, born in Kentucky, 1809, graduated at West Point, was by turns soldier, clergyman, lawyer, professor of mathematics in the Universities of Mississippi and Virginia, assistant secretary of war in the cabinet of Davis, writer of books and editor of *The Southern Review*. He died 1877.

The following are the philosophical works of Bledsoe: "An Examination of Edward's Inquiry into Freedom," 1845; "A Theodicy, of Vindication of the Divine Glory," 1853; "The Christian Cosmos," an incomplete work published in *The Southern Review* in 1878; "The Philosophy of Mathematics," 1868.

I have been unable to secure the last-named work. The first three of these books are really a progressive series. The books on "Edwards" and "The Theodicy" argue for the freedom of man in the moral world, while The Christian Cosmos attempts to explain the presence of evil in the natural world. Bledsoe's attack is principally directed against those necessitarians who at the same time assert determinism and the moral responsibility of man.

Bledsoe examines the systems of the principal determinists from Descartes to McCosh and his analysis and criticisms of their positions is most searching and acute. But when he comes to his own constructive doctrine of freedom he is neither complete nor very convincing. He acknowledges, with M. Cousin, that the reflective reason in its judgments and the "sensibility" in its perceptions and feelings are under the law of necessity, but, he claims, the mind is free when it acts, namely, in its volitions. This is true because the attitude of the mind when it acts is entirely different from its conscious passivity in reflection, perception and feeling. The mind is not indeed conscious of a "power" to act or not act, but it is conscious of its act as its own. His treatment of this

problem reminds one of Eucken's activism and also of Bergson's "élan vital."

Bledsoe thought he was a voluntarist but really his method is, as a whole, thoroughly rationalistic. He is a significant thinker when taken in connection with the intellectual movement of which he was a part. Whenever Edwards is read, if he is yet read at all, Bledsoe should be read also. And in any case Bledsoe deserves a place in any history of American thinkers.

The Psychology of the Origin of Devil-Ideas. W. T. SHEPHERD, Washington, D. C.

The writer criticizes Sparkman's psychological attempt to explain the origin of ideas of Satan by the Freudian method. He objects that devils are *never desired* by man, and so much ideas could not be "the output in a sublimated manifestation of various thwarted and suppressed wishes of which it is no longer conscious." However, it is conceivable that ideas of *beneficent spirits* might be in part accounted for by the Sparkman view.

From a study of ideas of devils, as held by many peoples, in many typical religions, the writer concludes that the following are the important factors in their genesis: (1) imagination; (2) credulity; (3) fear; (4) curiosity; (5) personification of evil; (6) the subjective element in man; (7) abnormal mental phenomena, epilepsy, etc.; (8) unusual and awful natural phenomena; (9) environmental conditions; (10) the doctrine of immortality.

Methods and Problems in the Measurement of Association Reactions. KNIGHT DUNLAP, Johns Hopkins University.

This is a report on work done by Dr. Loring with the association apparatus which has been developed in the Johns Hopkins laboratory and described elsewhere. After making from the Student's Standard Dictionary a list of 10,888 words, including all nouns, adjectives and verbs which could possibly be used in an association experiment, the list was further reduced by preliminary work on several subjects to approximately 8,000. Lists for several controls were made from these and carried through on a number of subjects, giving important results on the relative reaction times for the several controls. A new type of double control was also developed which may serve for diagnostic purposes. A number of vital problems were formulated in the course of the work.

Retention in the White Rat. T. W. BROCKBANK, Catholic University of America.

The paper served to present the course of some preliminary steps to a broader and more conclusive work which the author is attempting in the subject, as well as to make some general definitions which seem necessary in view of existing confusion in the field of Retention.

It was pointed out that experiment up to the present, seems to indicate that the length of period of disuse of a habit has a marked effect on Retention; that the distribution of effort in Retention seems to follow the facts as established in the distribution of effort in learning; and that there is a dominant recurrence in Retention trials of those errors which are made most frequently in learning. This last fact is most evident after the longer periods of disuse, when the trials in Retention show a greater number of errors which appeared also in the learning.

Sound Discrimination in Dogs. W. T. SHEPHERD, Washington, D.C.

The paper is a report of experiments which were made on two dogs to ascertain their ability to discriminate differences of musical notes of different pitch. If an animal forms an association between a certain musical note and food, so that he reacts in a definite manner to that note in order to obtain food, we may infer that he discriminates that note from the other notes. The animal was to rear up with its fore paws on the front of the cage and look at experimenter at the sound of the proper note, and not so to react upon the sounding of the other notes.

Results: One (the younger animal) learned to react to food note and so manifest discrimination of a difference of three octaves of pitch on an harmonica in twenty-three days of tests, or in 385 trials in all. She also showed discrimination of difference of pitch on an organ in 115 trials (made in seven days, and following former tests). The other dog failed to show satisfactory evidence of discrimination in 450 trials with harmonica.

Securing Information Concerning College Students for the Appointment Committee. E. K. STRONG, JR., Peabody College for Teachers.

In order to fit graduates into appropriate positions, the appointment committee of a college must have as complete information as possible as to the applicants' fitness. Such information, as

secured now-a-days, can be roughly classified under three heads: (1) that based on intelligence tests, (2) that based on scholarship grades, and (3) that based on faculty rating. A fourth source not available in advising students, but necessary in order to check up any careful study of the subject is the value of the position the student actually secures.

At the present moment appointments are made more largely on the basis of faculty opinion than on any other criterion. But there exists no adequate means of combining the opinion of several individuals into an average which has as definite a meaning as the individual ratings. In order to help solve the difficulty a scale of general intelligence of students at George Peabody College has been developed along the lines of Thorndike's Handwriting scale. A preliminary trial of the scale has shown that all the members of the faculty felt that the scale was valuable and that they could easily and fairly accurately grade new students in terms of the scale made up of old students.

The correlations so far worked out suggest that the four sources of information concerning a student are related to each other in the following order: (1) mental tests, (2) grades, (3) faculty opinion, and (4) value of position. That is, (1) correlates highest with (2), next highest with (3), and low with (4); (2) correlates higher with (1) and (3) than with (4), etc. It is suggested that intellectual ability (what a student may do, but not necessarily what he will do) is emphasized less and less as you go from (1) to (4), and that "emotional drive," "determination," or the slang "pep," together with "personality" are taken into consideration more and more as one goes from (1) to (4). If these considerations are correct, it would seem that appointments based on a combined faculty opinion rating would be of more value for the appointment committee than ratings based on intelligence tests alone. Probably a skilful fusion of the first three would be still more reliable.

Yerkes Point Scale for Measuring Mental Ability as Applied to Normal Adults. S. C. GARRISON, Durham, N. C.

During the spring of 1916 the Yerkes Point Scale test was given to 88 students in the psychological department of George Peabody College for Teachers. The class standing of the students ranged all the way from freshmen to second-year graduate students and their ages from 18 to 45 years. None of the students were familiar with the test and only a few had any knowledge of the Binet-Simon

test. The instructions set forth by Yerkes were strictly followed. All the subjects, except one, showed a willingness to act as subject. In this test it is possible for the subject to make a score of 100 points. The average score for the whole Peabody group is 96.5 points. Yerkes (A Point Scale for Measuring Mental Ability, page 92) found the average to be 94.6 for 25 students in the Boston Y. M. C. A. He also found an average of 88.3 points for 25 adult mill operatives. Very little difference was found in the average results of the 20 tests, into which the Point Scale test is divided, secured from the Peabody students and the Y. M. C. A. students.

In order to find whether there was any relation between the Point Scale results and class grades, the grades of all the Peabody students were secured for the quarter during which the test was given. A combined ranking was secured from these. Also a ranking based upon ratings of the students by 8 members of the faculty was secured. These two rankings were then correlated with the Point Scale ranking and with each other with the following results: for the Point Scale and grade rankings a coefficient of correlation of 0.19 was secured; for the faculty and Point Scale rankings one of 0.15; and for the faculty and grade rankings one of 0.59. After securing such low coefficients of correlation when the Point Scale ranking was used, we discarded all the individuals who had made a score of over 96. This left about 50 per cent. of our cases. These were in turn correlated with the faculty and grade rankings. The following coefficients of correlation were then secured: faculty ranking and Point Scale 0.11; Point Scale and class grade 0.21; faculty ranking and class grade 0.70.

The tests seem to be too easy and the coefficients of correlation seem to show that there is very little, if indeed any, relation between the rankings given by the Point Scale test, the school grades, and the faculty ratings.

The Learning Curve as a Diagnostic Measure of Intelligence. E. K. STRONG, JR., Peabody College for Teachers.

The slope of learning curves of school children based on simple arithmetical combinations apparently correlates to a very considerable extent with the general intelligence of the children. This is particularly true when the extreme cases are alone considered. Very steep curves or very flat curves are accompanied by decidedly good or poor work in the grades.

Fourth grade normal children advanced in 14 days drill of two

minutes each day from 38 simple addition combinations, such as $\frac{9}{4}$ $\frac{3}{7}$ in two minutes to 66 such combinations. A class of defective children of the same age but in still the second grade advanced from seven to fourteen such problems. After 25 days of special drill on the material by a good teacher, the class advanced from 15 to 22 problems. (It is only fair to say that a considerable part of the gain is due to two or three children whose presence in the special class was due to sickness, etc., rather than mental defectiveness.) It is suggested that some drill work in the early grades can be carried on in such a way that learning curves of the children can be developed. In terms of these curves very much information as to the real ability of the children can be obtained. Class-subdivisions, etc., could properly be based on the slope of the learning curves.

Experimental Studies of Achievements in Spelling, Reading and Arithmetic, of Large Groups of Children in the South and Certain Related Problems. DAVID SPENCE HILL, The University of Wisconsin.

1. *Spelling Tests of 24,384 Children in 78 Schools.*
2. *Measurements of Achievements in Silent Reading.*
3. *Arithmetic Abilities of 15,000 Children Measured by Courtis Tests, Series B, I.*

These three studies were made under the direction of the writer in the spring of 1916 and during the term of his contract in New Orleans. The children were approximately 25,000 pupils of the public schools. For local use typewritten memoranda of the results were distributed to teachers and principals. Partial results of the researches of the year were included in a recent annual report of the board of school directors of New Orleans. An adequate presentation of the data and analysis, it is hoped, will be published elsewhere. In the present three series of tests emphasis was placed upon: (*a*) Organization of work of administration of the tests and of computation by trained assistants in order to secure validity. (*b*) Getting results promptly to teachers, citizens and pupils. (*c*) In the case of spelling, upon the introduction of standard illustrative sentences, a factor overlooked in the Butte, Springfield, Des Moines and Oakland studies. For use of investigators the writer will furnish the sentences and words (address University of Wisconsin). (*d*) Certain discrepancies were detected between the actual lists

used widely in Butte, Springfield, etc., and Ayres's elementary vocabulary as printed. (*e*) explanations to principals of the limitations and of the wise administrative uses of results. (*f*) It was observed that the inferiority of the scores made by the negroes, as a rule in spelling, reading, and arithmetic, cannot safely be made the basis of deductions concerning psychological differences of race, owing to the markedly different social and economic factors, and the characteristics of the schools, affecting respectively the groups of whites and blacks. (*g*) The use of all the above tests were chiefly pragmatic. It seems obvious that complete psychological analyses are demanded in order to determine what is actually measured by the devices used—Ayres's, Kelly's, Starch's and Courtis's.

The Concept of the Subconscious. H. W. CHASE, University of North Carolina.

The results of much physiological research during the last few years have been such as to make it evident that the traditional formulæ in which the psychologist has set forth his ideas of the physiological bases of mental activities are far too simple. The work of Sherrington, Cannon, and others, leads to the conclusion that much, if not most, of the nervous system, including both central and autonomic divisions, is active at any given time and that much of this activity is typically integrated to produce a single end-response. This means that the cortical processes directly correlated with a given mental state are only the focal points of the activity of many complex neural patterns. The particular cortical pattern connected with the given state of consciousness is conditioned by the total activity of the nervous system at the time. The Freudian analyses are valuable for the stress which they lay on this fact of the intricate determination of every mental state. This is true whether or not the conclusions reached by their methods in any given case be accepted. The Freudians, however, have been driven to mysticism by their attempt to demonstrate that this determination is psychic rather than physiological. It is to be interpreted, as Watson is insisting, in terms of neural mechanisms.

The activities of cortical mechanisms which condition the conscious response, but are not themselves accompanied by mental states, may be regarded as subconscious. In abnormal conditions such mechanisms may so integrate themselves as to produce behavior not characterized by the presence of conscious states. Whether this is possible in normal conditions is a question needing

experimental investigation. The idea of the subconscious as an entity must be abandoned, as that of consciousness as an entity is in process of abandonment. Subconscious processes there are, but merely in the sense of complex neural activities not accompanied by mental states. Such a point of view is not new, but the beginnings of serious attempts to understand human behavior make it necessary that the recognition of their presence be more than through the perfunctory statement that determining tendencies, nervous sets, etc., exist. The psychologist must learn from the student of abnormal mental phenomena the importance of subconscious processes, and must strive to extend experimental methods to this field.

Some Aspects of the Relations of Abnormal Psychology to Educational Problems. LUCILE DOOLEY, Washington, D. C.

Since abnormal psychology investigates, analyzes, and describes defective, inadequate or disorganized modes of behavior its relation to educational problems must be one deserving serious consideration by educators whose function it is to build character that is socially useful. The problem of the "defective" child has received much attention from both psychologists and educators, and the space given to mental tests for the determination of retardation or intelligence defects now bulks large. A yet more important problem of education is the problem of the *prevention* of defective development. That social inefficiency may be prevented in many cases by carefully directed education of the unfortunately placed individual is a warrantable conclusion to be drawn from the successful reëducation and rehabilitation of adult derelicts by psychiatrists who use the method of psychoanalysis or other methods. Students of abnormal psychology in the field especially of the emotions have been able to show where faulty adjustments or vicious reactions at certain points have resulted in mal-development that could have been avoided by intelligent guidance at the important time. Pawlow's demonstration of the conditioned reflex and Freud's theory of the repressed complex, and his valuable principle of the transference of affect to successive objects, are not far apart in the light they throw upon a crying need in education and a problem that cannot be ignored, namely, the training of the emotional nature of the child. This necessarily throws the emphasis of our educational theory upon the individual. The need can not be met by the insufficient number of insufficiently trained teachers now at our com-

mand. This is no reason, however, why the problem should not be faced, studied, and progressively solved as we grow in wealth and wisdom. We have made a beginning at such special care of the feebleminded and in efforts at vocational guidance and training.

Abnormal Psychology, in its analysis of intelligence and character defects of individuals, influences the solution of educational problems along lines that may be roughly indicated as follows: (1) The problem of the special care and training of the congenital defective as to make him of as little detriment and of as much positive benefit to society, as possible. (2) The problem of special training of the "socially feeble," as distinguished from the intellectually feeble. (3) The problem of vocational selection as a problem of social efficiency. (4) The problem of obtaining the maximum development and efficiency in every individual.

The Conservation of Mental Health. TOM A. WILLIAMS, Washington, D. C.

This matter is of national importance, as is shown in the character of such peoples as the French, the Poles, Russians, Germans, in the conduct of their affairs. The fundamental bodily factors of mental health are not entered into in this place.

The psychological factors, dynamic influences determining static potentialities, are controllable environmentally, especially during formation in youth. The tendencies of a child may be fostered, deviated or repressed. To ascertain which are the desirable trends is the task of the psycho-diagnostician. Every parent should consult one regarding the children's traits. The fostering of these then becomes an aim to be intelligently pursued. It is in this way that precocity has been attained by some in our day. Undesirable tendencies are readily deconditioned into health by causing their opposites to appear attractive through a method of psychological substitution effecting a change of inclination. Repression, the aim of most moralists, is a dangerous and seldom successful procedure.

The psychology of two chief types of individuals, the impulsive and the anxious, is considered. Sometimes innate, each of these characters can often be traced to psychological determinants. The maladaptability of such individuals is obviable by psychotherapy. When this is skilful, adjustment persists. Proper psychorthogenetic procedures are powerfully prophylactic, both against hysterizability and against potential psychasthenia. Adults already

possessing these tendencies must be taught their own psychology by the mental conservator, who must be a physician as well as a psychologist, in order to differentiate in each patient the manifestations which arise from those disturbances of the body which are not psychogenetic. Only a very thorough knowledge of the practical application of physiology, medicine and clinical neurology can compass the delicate differentiations often required.

The Psychology of Inebriates. TOM A. WILLIAMS, Washington, D. C.

Inebriety is merely the expression of craving, due to inadequacy, vacuity, or suffering of various causations. Physical factors are very important as well as the psychological. The latter are usually the product of upbringing. The chief of these are discussed with reference to different types of inebriates.

Correlation between Memory and Perception in the Presence of Diffused Cortical Degeneration. THOMAS VERNER MOORE, Catholic University of America.

Correlations were based on memory and perception measurements made on thirty inmates of the institution at Egelfin and Haar near Munich. Patients were suffering from paresis, Korsakow's psychosis, chronic alcoholism or dementia senilis. It was maintained that in the study of the correlation between mental functions there is a certain advantage in choosing pathological cases. The wide distribution of values renders the correlation less likely to be swamped by the errors of observation. Measurements were made by exposing to the patients in successive experiments eight real objects, eight pictures, eight printed words and eight spoken words.

Two measures of memory were obtained: (*a*) The number of objects, pictures, and words recalled immediately; (*b*) the ratio of what was remembered after one minute to the value obtained for immediate memory. Perception was measured by having the patient name pictures of simple objects and measuring by means of a stop watch the time it took them to do so, and recording the number of pictures they succeeded in interpreting. Assuming that perception varies directly as the percentage interpreted and inversely as the time of naming one obtains a quotient which is a fair index of the ability to perceive. Correlation between perception and memory ratio is .65 + .07 thus showing that both functions have some tendency to deteriorate with general cortical involvement.

A table of correlations was constructed and the correlation of correlations determined as suggested by Hart and Spearman. Applying their criterion one does not find evidence only of general ability but rather that two such things so closely connected as immediate memory and the rate of forgetting must depend on two different functions of the nervous system.

The Effects of Habits in the Responses of the White Rat. JOHN L. ULRICH, Catholic University of America.

The Influence of Pauses in the Economy of Learning. H. D. WILLIAMS, Brenau College.

A Note on Consciousness. WALTER B. SWIFT, Boston, Mass.

Conflicting Affective Reactions to Compound Visual Stimuli and Their Influence on Behavior. E. J. KEMPF, St. Elizabeths Hospital.

Reëducation of the Nervous. R. S. CARROLL, Asheville, N. C.

GENERAL REVIEWS AND SUMMARIES

HEARING

BY ROBERT MORRIS OGDEN

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Our understanding of the physiology of the inner ear is augmented by Hardesty's careful investigation of the organ with special reference to the structure and growth of the tectorial membrane (3). Studying chiefly the organs of hogs, as prepared immediately after slaughter, the author is able to demonstrate that the tectorial membrane is continuous throughout the cochlear duct, and that it varies uniformly in width, thickness and volume. It is about seven times wider at the apical than at the basal end of the cochlea, whereas the corresponding variation of the spiral lamina is only about 1 to 1.4. In thickness its variation is about 1 to 3, and in volume 1 to 41.7. The specific gravity of the membrane is but little greater than that of the lymph which surrounds it, consequently it is not subject to any considerable shifting of position when the head is moved. From these results the author concludes that the tectorial membrane is the chief vibratory structure in the mechanics of hearing. The basilar membrane may

participate in the case of very strong sound, but its fibers are so blanketed that they cannot, he thinks, be subject to independent vibration. He therefore favors a "telephone" theory as against the Helmholtzian conception. Although the details of a complete theory are not given, it would appear that tones of different pitch are stimulated at different regions of the cochlea in accordance with the varying vibratory capacity of the tectorial membrane. Stefanini (8) constructed a model similar to those of Ewald and Lehmann, in which, however, the rubber membrane was replaced by one of waxed cloth stretched in the form of a piano board. He found that despite the longitudinal cross-fibers of the cloth, the horizontally stretched fibers reflected by appropriate mirrors at different regions vibrations that corresponded to different sound pitches produced by tuning forks in their neighborhood. This he regards to be an important support for the Helmholtz theory, and it would seem to throw doubt on Hardesty's conclusion that the fibers of the basilar membrane are so "blanketed" that they could not possibly respond as resonators for sounds of varied pitch.

Sterzinger (9) has obtained interesting results concerning the general rhythmic effects of successive sounds, and their correlation with the agreeableness of the intervals employed. With a specially constructed chime whose tones varied in vibration frequency from 256 to 512 vib., he was able to study successive clangs with reference to their rhythm and agreeableness. The tones were actuated electrically at intervals controlled by the Meumann time-sense apparatus. The intervals studied were the major second, major third, fourth, fifth, major sixth, major seventh and octave. The results indicate that with successions of two or three tones of equal time interval and intensity, the higher tone carries the accent. The time interval between tones influences the subjective rhythm. A "neutral" interval was found to approximate .55 second. Shorter intervals favor iambic and longer intervals trochaic or spondaic rhythm. With three tones the rhythmic impression can be destroyed by gradually lengthening the interval between the end tone and its neighbor. Before the rhythm is destroyed there occurs a zone of doubt whose middle point is fixed as the "indifference point." In a three-tone succession a "natural pause" is required between the accent carrying end tone and its neighbor. The rhythmic character of a single interval was found to be the same whether it were a two-tone or part of a three-tone succession. A marked correlation appeared between the rhythmic character of

the intervals and their relative agreeableness. The curves as plotted rise from the major second to the major third, then to the fourth. They drop with the fifth, rise again slightly with the major sixth, drop again with the major seventh and rise finally with the octave. The curve of agreeableness with simultaneous binary combinations was found similar except that the highest degree in successive intervals was attained with the major third, and in simultaneous intervals with the fourth.

Weiss (12, 13) has constructed an apparatus for the production of pure tones in which the tones may be varied in intensity by any number of steps. The tones "come in" and "go out" at full intensity, without disturbing noises, and their phase relations are under control. In the experiments performed the tones used were those of 150, 200, 250 and 300 vibrations. Comparisons of two tones were thus made in which the tones were given simultaneously and successively, with one constant and the other varying its objective intensity through an arbitrary range of ten steps from a weak yet clear tone to a strong yet not disagreeable tone. The variations of intensity were of ascending and descending orders. The problem was to equate the intensity of the variable to that of the constant tone. The results indicate that a simultaneous tone is made weaker (or heard stronger) than a successive tone, and that a tone descending in intensity is made stronger (or heard weaker) than an ascending tone. In tones varying from weak to strong the observer left the tone too weak, whereas in tones varying from strong to weak he left them too strong. In the judgment of a simultaneous tone it is made about a half step weaker than is a successive tone. The successive tone intensities were less variable than the simultaneous, and the ascending series were less variable than the descending. The author estimates that at least twenty-five differences in tonal intensity might be discriminated. The variability of judgment was found to be less with intervals of 100 vibrations than with those of 50 or 150 vibrations. Birnbaum (1) describes an apparatus for testing auditory acuity. It involves a telephone tone made pure by the aid of a special disk and resonator, and permits exact variations of intensity by corresponding variations of an alternating current of electricity. Seashore (7) has given a popular description of his tonoscope and its range of usefulness as a means of practical training in singing, and as an instrument of scientific investigation.

Stumpf (10) in a critical review of the recent literature of hearing

accepts the distinction of *quality* and *pitch* or *brightness*. He is inclined to regard the former as a primary characteristic or common quality of all C's, D's, etc. These are referred to as "Urqualitäten," whereas the remaining musical intervals may be historically explained. With regard to the C's, Stumpf favors an outstanding place for them in the series of tones. These special C regions would account for Köhler's results which attribute to them the locus of the vowels. While recognizing the upward trend of the series *u*, *o*, *a*, *e*, *i*, and a region of brightness or pitch as characteristic of each, Stumpf is sceptical of the "octave law," and finds it impossible to discover a specific resemblance of *o*, *a* and *e* to c^2, c^3 and c^4. He is therefore inclined to reduce vocality to quality, rather than quality to vocality. Jaensch is criticized for describing vowels as the qualities of noise, and the idea is expressed that quality is a central factor, whereas pitch is determined by the receptor. The author further indicates his agreement with Brentano that discrimination of quality may be finer than discrimination of pitch.

The Pannenborgs (5) give their deductions concerning traits of character among musical persons as based upon three sources of information: (1) an elaborate questionary on heredity, (2) biographical data found in the lives of famous musicians, and (3) a school questionary. From the first material 423 persons of special musical talent, 52 possessing it in an exceptional degree, were taken into account. The second was based upon twenty-one monographic accounts of the lives of an equal number of famous musicians. The third dealt with results obtained from 342 boys and 152 girls between twelve and eighteen years of age, all of whom were musical. Correspondences in thirty-two traits were found between the first and second sources of information. From this a picture of the musical person is drawn with special reference to the characteristics of movement and manipulation, feeling, "secondary functions" such as shifting attention, intellect, desire, etc. It cannot be said that the correlations were always high, or that the resulting picture is altogether significant.

Peterson's observations on binaural beats (6) lead him to conclude that they are not explained by conduction of the sound waves *via* the bones of the skull. Binaural beats are distinct both in character and in physical cause from monaural beats. When the phenomenon is purely binaural, they are not beats at all, but periodically perceived changes in a tone whose location wanders or shifts from ear to ear. As these shiftings become rapid the effect

approaches that of true monaural beats, for the fluctuations can be counted with the same precision. The phenomenon appears to be of cortical origin. Burtt (2) describes experiments in audition suggested by those of Wertheimer and Korte on a visual illusion of movement, and of Benussi on a tactual illusion of the same order. He finds that two faint similar auditory stimuli in quick succession a few centimeters apart yield, under certain conditions, the impression of a sound moving in the direction of the actual temporal succession. Although subject to a variable individual susceptibility, the phenomenon was noted by four of his five observers at an optimal time interval of 25 to 30 sigma. It was also found that the longer the exposure, the shorter, relatively, must be the time interval in order to yield the optimal impression of movement. Furthermore, if the intensity of the second stimulus was greater than that of the first, the apparent movement was often in the reverse direction. It is concluded that this illusion is so directly comparable in its conditions and effects to the illusions described by Wertheimer, Korte and Benussi that it suggests a similar explanation. Wertheimer's theory of a "physiologische Kurzschluss" between the regions of the cortex corresponding to the two points in visual space will evidently not apply to the auditory illusion. The author ventures an explanation in terms of the "action theory." Assuming a motor impulse to move the head, the positions of the sounds will be represented cortically by impulses of different intensity in the motor regions which lead to the muscles of the eyes and neck. If the second stimulus supervenes rapidly enough there is a continuity of motor impulse. The direction in which the second would lead, if executed, relative to the first becomes the cue to the direction of motion. With an increase in the intensity of the second, its motor impulse is temporarily facilitated sufficiently to produce the effect which would have been obtained had it actually preceded the first.

Two new volumes which warrant more detailed consideration than this summary will permit are *The Science of Musical Sounds* by D. C. Miller (4), and *The Psychology of Sound* by H. J. Watt (11). These are accordingly reserved for special reviews.

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AFFECTIVE PHENOMENA—EXPERIMENTAL

BY JOHN F. SHEPARD

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No very elaborate investigation has appeared during the year. Foster and Roese (3) gave their subjects definite experiences supposed to be typical of the six quality-groups of the Wundtian theory of feeling. This method, rather than a mere verbal statement, was employed to give the subjects correct standards of the quality-groups. After the orienting experiences for each quality-group, twenty-four tones were used in the paired comparison arrangement and the observer was asked to judge the tones with respect to the quality-group concerned. Curves were plotted showing the distribution of judgments. The writers maintain that they find six typical curves (three pairs) in their results; to the reviewer there seem to be enough exceptions to suggest almost every other curve which would be possible under the conditions. In any case, the three types of curves do not correlate with the Wundtian dimensions and the writers have not succeeded in correlating them with any other determining factors. The introspective reports are no more favorable to Wundt's theory. "Sense-feelings" as well as affections seemed to form the basis of judgments.

Moore (4) suggests a method for testing the strength of instincts or emotions which, if it can be made to work successfully, is of unusual interest. As in controlled associations generally, the subject is given a series of words to which he is to respond with a verb expressing reaction in which he is thought of as involved personally. Such reactions are then called for in response to words strongly suggestive of instinctive or emotional situations. If, for a given word, a different emotion than the one ordinarily expected is aroused, the one aroused is given the credit, the other graded zero for that particular test. The time is taken and is usually inversely proportional to the strength of the emotional effect. The interpretation to be made is checked by careful introspections. On the basis of a series of such records, it is hoped to grade an individual as to the strength of emotional responses.

In Feleky's (2) experiments, the subjects were asked to revive or imagine different emotional attitudes while the breathing was being recorded along with the time. The results seem to be very few, and indicate specific differences in the inspiration-expiration ratio, the depth of breathing, and the rate of work in breathing, correlating with specific emotional conditions. The difference between anger and hatred appears ambiguous.

Baxter, Yamada, and Washburn (1) gave sixty-nine observers a series of words, to half of which they were asked to respond with unpleasant personal experiences which the words suggested, to half of which they were to respond similarly with pleasant experiences. There seems to be some correlation between cheerful temperament and relative slow recall of the unpleasant. Recall of pleasant experiences occurred slightly more readily than recall of unpleasant experiences.

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AFFECTIVE PHENOMENA—DESCRIPTIVE AND THEORETICAL

BY H. N. GARDINER

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If the somewhat acrimonious dispute between McDougall and Shand (6), in which Stout plays the part of a mediator, concerned only their personal differences of opinion, it might be dismissed with a brief reference; in point of fact it goes to the root of some fundamental questions and is perhaps the most important item in this year's report. The discussion is difficult to follow, being complicated by the effort on the part of each to convict the other of absurdities and inconsistencies, and the questions at issue are not always altogether clear. The basis of the discussion is a difference in the conception of instinct. According to McDougall an instinct is an innate affective disposition ("affective" for him includes "conative") of essentially the same nature as all other innate dispositions to feeling and action, its peculiarity consisting in "the innate conjunction of any such affective disposition with one or more cognitive dispositions." The differentia of instinct, then, consists in the existence of certain psychical dispositions with—it is to be assumed—their nervous correlates. Shand, on the other hand, regards it as consisting rather in modes of behavior, namely in complex trains of innately predisposed movements, and also in the simpler and the simplest constituents of such trains. Stout thinks that in including the last he is fairly exposed to McDougall's charge of obscuring the distinction between instinct and reflex action, and himself proposes to evade the difficulty by calling these constituent movements instinctive movements, but not instincts. Connected with this initial difference is that concerning the psychic aspects and relations of instinct. Stout objects to McDougall's definition as including without warrant a conative-affective disposition and a cognitive disposition as two separate structural units. The chief disagreement between McDougall and Shand concerns the relations of instinct and emotion. McDougall holds that the activity of an instinct is accompanied in all cases by an emotion that specially belongs to it, and on this basis founds his doctrine of primary emotions; Shand maintains that a primary emotion may employ different instincts, that the same instinct may subserve the ends of different emotions, and that an in-

stinct may be excited without evoking any particular emotion. McDougall, however, does not deny that variable emotional states arise in successive phases of the same activity; he only holds, as Stout points out, that there is one kind, and only one, which is *congenitally* determined. The question, then, is—and this seems at times to be the vital issue—whether the various emotions that occur in the course of an instinctive activity have their source, as Shand appears to think, in a congenitally organized system of congenital dispositions, or whether, as McDougall contends, they are referable to such general psychological laws as the law that the thwarting of desire tends to arouse anger. Stout suggests that even if the latter be the case, the concurrent operation of congenital dispositions is not excluded. McDougall ends his paper with a criticism of Shand's doctrine of sentiment, but the dispute is largely personal, and goes beyond the main topic.

The chapters in the new textbook of Pillsbury (7) which deal with instinct, feeling and emotion show a marked improvement over the corresponding chapters in the earlier book both in general treatment and in fullness of detail. They include reference to recent discussion and, while not presenting any new point of view, probably express more nearly the prevailing opinion on these topics than any other work. As a minor correction, it should be noted that McDougall does not now regard sorrow as a primary emotion. See the discussion just referred to.

Angell (1) contests the view held by many psychologists that James's theory of emotion has been demolished by the work of Sherrington and Cannon. The former, he thinks, only shows that the motor impulses which normally pour into the muscles of the head and forelimb region are not notably reinforced by impulses from the viscera; the degree in which the animal's consciousness may have been modified is uncertain. The latter only shows the extreme difficulty of regarding visceral activities as a basis for differentiating emotions. Neither shows either that the emotion precedes the expression, or that different emotions are not due to differences in the total instinctively conditioned response, which was James's theory.

Jensen (5) finds in "fear," taken in the broadest sense, a potent cause of the acute intestinal disturbances which allow toxic substances to stream into the blood. The effects are analogous to those occurring in shock during abdominal operations. Some clinical facts are adduced in support of the hypothesis. The synop-

sis which Hyslop (4) gives of an article on anger suggests a thorough treatment, but the article itself is rambling. It goes back to the early Egyptians and has much to say about running amok, being evidently inspired in part by the example of Germany in the present war. In the latest and, alas, the last of the many contributions made by Ribot (8) to affective psychology, the traditional treatment of the sublime as specifically an æsthetic emotion is disputed. He finds, instead, that the æsthetic sublime is only one of many kinds, the most impressive kind being the religious. Its analysis shows two fundamental elements, one affective, fear, the other intellectual, the apprehension of an imposing force. The secondary elements are, for example, the feeling of our own inferiority, the contrasted feeling, through sympathetic participation, of exaltation, the feeling of security and the confused feeling of depression translating the vague tendency to fear. Ribot concludes characteristically—and this may perhaps be regarded as his final legacy—with a criticism of the earlier "intellectualistic" treatment of the feelings as consisting of pleasure and pain instead of regarding these affections as expressions and signs of the profounder instincts, appetites, tendencies and desires, in a word, of motor phenomena. He ascribes to this cause the traditional treatment of the sublime.

Federn (2) corrects the opinion of some analysts that Freud's principle of pain-pleasure applies solely to the unconscious and that his principle of reality applies to the conscious by pointing out that the former does, indeed, exclusively control the unconscious, being essentially connected with the *libido*, but that it also operates to produce some of the most valued results of civilization, and that by the principle of reality Freud understands, not the general adjustment of the individual to reality, which is due to the action of both principles, but a psychic mechanism, the greatest use of which is found in the methods of the natural sciences. For Freud's (3) own treatment of the pleasure-producing mechanism of wit, it is sufficient to refer to the review of his work in a forthcoming number of the BULLETIN.

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ATTENTION AND INTEREST

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Adams (1) in his recent book brings together the results of several of his earlier experiments on attention in advertising not mentioned in these reviews. The right-hand page is noticed much more frequently than the left, the top of the page more frequently than the bottom, the outside edge has a higher value than the inside. Study of the effect of size upon attention by noting the number of times objects of different sizes were first seen proved that attention increases with size, rapidly at first, then more slowly. A square of 2.25 sq. in. is seen 1.78 times as frequently as one of 1 sq. in., one of 4 sq. in. 2.05 times as often; one of 9 sq. in. 2.74 times as often. Experiments by the same method showed that red, orange, blue and black are most likely to attract attention.

Two researches by the introspective method may be mentioned. Dallenbach (4) extends his earlier study of the range of attention and the influence of distraction and change to a study of cutaneous sensation. This study confirms the other that two types of individuals may be distinguished with respect to distribution, the two-level and multiple-level types. "Intensive changes and changes to a greater intensity or extent are more compelling than are extensive changes and changes to a smaller intensity or extent." Curtis and Foster (2) compared the effect of intensity and size upon the clearness of a Greek cross. In short exposures the observers were to judge whether one or the other of two crosses which were varied in size and intensity and exposed for 110 σ was the more clear. Observations of three subjects in 200 experiments each seemed to show that change in size had no effect.

In work primarily with images Miss Clark (2) obtains evidence of characteristic eye movements with secondary or voluntary attention. These are transferred to the examination of the image by association with the actual visual perception. As one turns the

eyes to make parts of an object more clear, so also if one is anxious to make sure of part of an image the eyes turn as they would if the actual object were presented. The movements occur as clearness increases, both probably as a result of voluntary attention.

Woodrow (5) by his detraction method demonstrates a similarity of the degree of attention to different stimuli which convinces him that there is a general factor in all attention. He finds for twelve subjects a coefficient of correlation between attention to cutaneous, auditory and visual stimuli of .78, .78, and .76. Attention to touch is highest and sound and light follow in order named. It is less in choice reactions with a changing intensity of light as the stimulus. The author concludes that attention depends upon a number of different factors, one of which is constant for each individual. This may be called general capacity for attention.

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PSYCHOPHYSICAL MEASUREMENT METHODS

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Weiss (13) reports an important contribution to the study of sound intensities. In the first part of this paper the author describes a very intricate and complicated apparatus for the controlling of the intensity of auditory stimuli and for the producing of pure tones. This apparatus, which seems to have particular merit, may also be used in part in visual experiments where a constant illumination is desired. The author conducted some preliminary experiments on the influence of the method of presentation upon the intensity relations between tones. The facts of adaptation, *i. e.*, the influence which the character of the preceding tones has upon our perception of a tone, are simply unknown. Four experimental procedures were employed, and the results were taken in accordance

with the method of supraliminal increments. The results show in general that in both ascending and descending series the reaction was premature, *i. e.*, the tones were judged equal before they were actually objectively equal. Ten standard tones were employed and the phenomena characteristic for each experimental arrangement turn out to be rather evenly distributed over these different intensities, although at times the central values seem particularly sensitive for some arrangements and particularly insensitive for others.

Rich (10) reports an experimental determination of tonal volume at different parts of the tonal scale. Stern tone-variators and a piston whistle were employed as stimuli, and the results were taken in accordance with the procedure of the method of constant stimuli. The results show that the limen values for tonal volume increase very regularly and markedly with an increase of pitch. The relative limen values, *i. e.*, the limen of volume divided by the vibration frequency of the standard tone, remain relatively unchanged for the range investigated, namely, from 110 to 6,400 vs. The size of the coefficient of precision decreases markedly as one goes from the lower to the higher pitch standards. Some introspective data tend to show that the judgments of tonal volume, whose limens differ from those of pitch both in magnitude and course, were made on the basis of the attribute of volume itself, inasmuch as the secondary criteria tended to be eliminated by practice.

Titchener (11) contributes a critical discussion of ethnological psychological tests in general, and of the results of the Cambridge Anthropological Expedition to Torres Straits in particular. He first criticizes McDougall's finding that the two-point tactual discrimination of the natives was about twice as refined as that of Englishmen. Titchener objects to the method on the ground that it is too suggestive, and that it does not take into account the perceptive forms between one-point and clearly two-point. He also points out that the method employed "bears all the earmarks of an incomplete psychophysical method" as parts of several methods were employed without testing the reliability of the combination. Indeed, Titchener reports the results of a little experimental investigation under the suggestive conditions, and obtains a limen for dual impression of less than zero. Titchener also criticizes Rivers's work on color vision reported in the same investigation. Conditions such as those of general illumination were not carefully controlled, and these factors alone might account largely for the

results obtained. But his chief criticism of this particular experiment is on the matter of the color nomenclature used by the Murray Islanders. He enters into a long philological discussion and shows that the descriptive words used by the natives are capable of a very different interpretation and translation than that given by Rivers. In conclusion, Titchener discusses the requirements of a field test, and advocates the abandonment of the present psychophysical methods in the shortened form in which they are usually applied in anthropological work, and suggests a return to the "all or none" type of determination for the field work; this to be supplemented by extended laboratory tests on a few subjects carried on in terms of the strictest forms of the psychophysical methods.

De Laski (5) begins a systematic quantitative exploration of the perceptive forms below the two-point limen in cutaneous sensitivity. A practice series was first employed so that the subjects could memorize the perceptive forms of spot, line and dumb-bell. The author believes that the judgment is made, in determinations by subliminal cutaneous stimulation, on the basis of the qualitative aspect of the form of the perception rather than by the quantitative criterion of length. Carnes and Shearer (3) report an experimental investigation of the problem of mechanical and manual stimulation in the determination of the cutaneous two-point limen. The Jastrow æsthesiometer was used and, for the mechanical stimulation, this was fixed to a Titchener applicator. The authors find that the mechanical form of application of the stimulus gives both a lower limen and a higher value of the coefficient of precision than does the manual form of application, and hence has a slight scientific advantage. The differences are small, however, and for all practical purposes, careful manual stimulation seems to be adequate.

Fernberger (8) reports the results of a study of the influence of mental and physical work on the formation of judgments in lifted weight experiments. Two separate experimental series were employed, the two factors being investigated at different times. The mental work consisted of a half-hour's reading of difficult German, and the physical work consisted of tiring the hand with an ergograph, up to the point of painful fatigue. The method of constant stimuli was employed, and the work series in each case were compared with a normal series of judgments which were taken during the same experimental sittings. It was found that mental work has a very variable effect upon the final values obtained in such an

investigation, both when we compare the results of the different subjects or of the same subject from time to time. The average values for all of the subjects for the series after mental work when compared with those before the work was performed turn out to be almost identical. Physical work, on the other hand, has a marked tendency to decrease the size of the coefficient of precision of the heavier judgments, and to decrease the size of both the upper and lower thresholds; to increase the size of the interval of uncertainty over 30 per cent. on the average; and to decrease markedly the size of the point of subjective equality. Fernberger (**6**) also reports an investigation of the effects of the initial stages of practice in lifted weight experiments. Urban had studied the effects of extended practice, and the present paper is an attempt to determine the practice effects within the first 100 judgments on each of 5 pairs of comparison weights. The method of constant stimuli was used. The results show that progressive practice increases the values of the coefficients of precision, and decreases the values of both the interval of uncertainty and the point of subjective equality. The effects of this progressive practice are stronger at the beginning of the experimental series and decrease at first rapidly and then more slowly as the experimentation continues. The author advocates, therefore, the taking of at least 50 judgments on each of five comparison pairs of weights in the determination of thresholds for anthropometric purposes. This is a much larger number than has been frequently used by anthropometrists. Although by no means eliminating the effects of practice, the author considers this recommendation as a compromise between time and accuracy, both of which are important factors in determinations of this sort. Boring (**1**) takes issue with this last recommendation. From the theoretical side, he insists that we are not interested in thresholds but in differences between thresholds. Hence Boring works out a determination of the probability of the significance of the difference between the two thresholds. He gives the formulæ and works out the values for a series of data of the two-point limen for forearm and eyelid. These are calculated in series of tens and, in some cases, the probable correctness of this difference, which is very large, gives a value of unity (absolute certainty) and in all cases it is highly significant.

Von Frey (**12**) takes up again the problem of comparing weights as estimated by resistance and by lifting. In the first case the arm was placed in a rigid mould so that lifting was not possible. In the

second series records were taken to determine the height and form of the lifting curve. The lifting procedure gives a threshold value which is larger than that for mere resistance because, the author believes, in the case of lifting we must lift the limb as well as the weight, and this tends to obscure to a certain extent the intensity of the kinæsthetic sensations caused by the lifting of the weight itself. In the case of the lifting procedure, however, there is a certain superiority as the subject was permitted numerous rhythmic repetitions, and hence the different sensations were brought in consciousness many times. Curtis (4) studied the duration of auditory, visual and tactual stimuli. The author was primarily interested in an introspective analysis of the durative judgment, but some quantitative results were also taken. The method of constant stimuli was employed. The results show that when a filled time is followed by an empty interval, the latter is usually underestimated. When the opposite temporal relations of filled and empty periods were employed, the limen values show great variation. Great variation was also found between the different subjects in their ability to handle the equality judgments. It was also determined that the reaction-time for the doubtful judgments was somewhat longer than for the judgments of positive equality, and these in turn were longer than those for the difference categories. The differences between active and passive attitudes on the part of the subjects toward the judgments was investigated. The results show that the limen values are smaller and the coefficients of precision are larger under the active instructions. In the series with visual stimuli a time error is evident in the case of four of the five observers. A similar marked time error is evident in the case of the tactual stimuli, and great differences in the size of the interval of uncertainty were found for the different observers in this series.

Fernberger (7) attempts to apply the concepts of the thresholds, the interval of uncertainty, and the other psychophysical values to certain types of data which are of interest in pedagogy and sociology. The puberty-age distribution lends itself to this sort of treatment inasmuch as the results fall into three mutually exclusive categories, and the results closely approximate the form of the curves of the psychometric functions. The author submits the data of the age frequency distribution of the different stages of transition of puberty obtained by Crampton to the calculations of the method of constant stimuli, and points out the significance of the final values obtained. Bradford (2) criticizes the existing standard measures of variability

(the average deviation, the standard deviation, and the coefficient of variation) when they are applied to the variability of performance of an individual. This is true when progressive practice enters into the results because all of these values are calculated from a fixed mean, while actually the mean value is constantly changing. Hence the author suggests a measure of variability which is calculated from a progressive mean. This is applied to some results of backward and forward alphabet tests obtained from a group of London schoolboys. The author correlates variability, as measured by his new values, with improvability. Harris (9) reports the results of some 15,000 estimates of the number of beans in samples of from 50 to 200 each. The subjects worked with knowledge of results. The results show that the personal equation, a tendency to estimate either too large or too small, seems to be remarkably little influenced by practice. But there is a distinct decrease in the size of the standard deviation showing an increasing steadiness of judgment due to practice. It would appear that the rate of this change is not uniform, but is most rapid at first and then has a tendency to decrease.

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CORRELATION

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General versus Group Factors.—Is a general factor necessary to explain the correlation between tested psycho-physical processes? The answer is gradually becoming more clear with the continuation of the discussion. Thomson (39) constructs a hypothetical hierarchy of coefficients and reproduces it with throws of dice. It meets Spearman's criteria for determining whether the correlations are explained by a general factor and shows average correlations approximating +1.00 between columns of coefficients. By the method of construction employed for the table, however, we know that there was no common factor; but only *overlapping group factors*, such as might be found if different tests embraced several group factors. Since Spearman admits the existence of group factors, the problem of interpretation is to decide whether overlapping group factors may not explain the correlation of columns of coefficients, without resort to any general factor common to all the processes. Thorndike's theory of levels Thomson calls a hypothesis of "non-overlapping group factors." The group factors that Spearman used in his hypothetical discussion were of this non-overlapping form, which he suggested would tend to give a correlation either zero or negative between the columns.

To this evidence of non-proof Spearman (36) replies briefly that the special arrangement of overlapping factors which Thomson submits might occur, but that the chance of it would be so small as to be negligible. He proposes to demonstrate in a subsequent paper, when his duties as major in the army permit, the nature of the principle represented in the distribution of factors in this specific case. It involves, he says, psychological absurdities and reintroduces the general factor by the back door.

Carey (5) shows both empirically and theoretically that a

hierarchy of coefficients may give correlations between columns all the way from +1.00 to −1.00 provided that the general factor is *supplemented* by group factors, which affect the upper, middle and lower portions of the columns, even when these group factors do not overlap. In a table of intercorrelations for school marks of pupils in the elementary schools he finds two such factors affecting a group of school studies, the larger being a motor factor affecting marks in writing, painting and needlework, the other a small factor of association between written words and their meanings affecting marks in composition, reading and spelling.

McCall (24) states that the correlations between columns of his table of raw coefficients ran all the way from +1.00 to −.95, a number were −.95. "If future researches substantiate our contention, it is almost a pity, for Dr. Spearman's theorem promised to be the Rosetta Stone of correlational psychology." He does not state how fully he followed Spearman's plan in arranging a hierarchy of coefficients and rejecting those which did not conform to Spearman's criteria. Gains in ability to score in tests of adding, mental multiplication, typewriting and cancelling show such low correlations that Thorndike (41) concludes that the capacity to learn these operations is specialized. Stecher (37) finds her "tests of nervous and mental control to be a great deal more specialized than we had previously believed to be the case." Kitson (23) corroborates the finding that correlations between school marks and combined test scores are higher than with separate tests, thus indicating compensations.

Heredity versus Environment.—The problem of explaining familiar resemblance by inner or outer factors is being analyzed more carefully by correlation methods. Goring's fundamental research (10) in this field is so important that it should be more generally available. This research covered scores of measurements and objective facts about three thousand British convicts. It took about ten years to complete. The conclusions rest upon the most complete treatment of the data under the advice of Karl Pearson of the Biometric Laboratory. It is a classical example of the importance of multiple correlation in resolving complex problems. It first thoroughly refutes the claims of the school of Lombroso as to the existence of a physical criminal type by showing that over thirty suggested physical characteristics are not related to criminality. Goring then demonstrates that criminality runs in families, but mainly through its relation to intellectual deficiency, which

shows a correlation of .66 with criminality. Through deficiency it becomes associated with alcoholism, epilepsy and social profligacy. Moreover, numerous external factors, such as example in the home, schooling, size of family, economic and employment conditions, were found to have no significant relation to frequency or length of imprisonment. The correlations indicated that ". . . relatively to its origin in the constitution of the malefactor, and especially in his mentally defective constitution, crime in this country is only to a trifling extent (if to any) the product of social inequality, or of adverse environment. . . ."

Cobb (6) makes an illuminating analysis of the question whether the inheritance of arithmetical ability is of the blended or segregating form. The study is entirely objective depending upon tests of parents and children by the Courtis tests. The problem was as to the resemblance to like, unlike and mid-parents in the *differences in the same person* between abilities to do the four simple operations of arithmetic and copying figures. The correlation is .60 with like parent, .01 with unlike and .49 with mid-parent. The results thus support the hypothesis of segregation of these abilities. The methods described in the paper promise to give the most fundamental answer to this problem of blended inheritance which has yet been forecasted.

Holley (14) shows that years of schooling are rather closely (.50 and over) and repeatedly related to certain factors in the home objectively measured, such as size of library, rent, taxes, number of rooms and years of schooling of the parents. This is contrary to the non-relation found by Van Denburg for economic factors. He introduces an important variation by comparing some of the results with those for adopted but unrelated children. Years of schooling of parents is more related to years of schooling of children than to school retardation of children. The author concludes without sufficient evidence that "environment influences more often cause a child to stop attending school than lack of ability to do the work." He might have approached this more directly if he had determined whether years of schooling of children were more closely related to school retardation than to the home factors. One is in doubt how fundamentally years of schooling are related to ability. Early elimination from school is "largely due to social and hereditary factors outside the school over which the school has little or no control." Size of family has no appreciable effect on persistence in school. Men and women tend to marry those of similar length of

schooling. The number of books in the home was more closely related to years of schooling of children than any other objective factor used. English (9) thinks that the generally low correlations of his tests of children with their ages "is a direct proof that environment and the tests have also a low correlation."

Method.—The calculation of coefficients has been made much easier by two very practical contributions. Thurstone (44) has furnished a formula for calculating the product-moment coefficient by means of the adding machine without figuring individual deviations from the central tendencies. It is very important to note, however, that failure to carry the means to sufficient decimal places may seriously alter the result. The chances of arithmetical errors are reduced to a minimum, and exact means are used. Ruml (23) developed the same formula so far as it applies to the standard deviation. Kelley (19) provides very valuable tables for calculating partial correlation coefficients, which Thorndike estimates will reduce the labor 80 per cent. It should now become a common practice to use the partial regression equations for weighting the various tested factors so as to get the best prediction of the series of measures which is taken as the standard. Accuracy, speed, etc., for a single test or the relative value of different scorings may be properly determined. The author also gives a method for approximating the weighting when more than four variables are involved. If the tables reach a second edition he promises that they will be carried out for further decimals.

Ruml (34) suggests that the working value of a test cannot always be determined by correlating performance in the test with the exact evaluation of each individual's ability, since the practical problem is often to divide the individuals into two or more groups and their exact positions within each of these groups is not important. He ingeniously utilized a Pearson formula for determining which test will best divide a group into subgroups containing particular percentages of the total group. Stating the practical problem in another form his method will predict what division of a group can best be made by a particular test. Whenever it is desirable to evaluate tests that are to be used in the selection of portions of groups of individuals in education or business, he recommends his procedure as preferable to simple correlation. The method is illustrated with examples so that it can easily be utilized. Otis (27) sets forth a suggestive method for plotting a "curve of rank relation" which may represent very simply the reciprocal relations

between two variates by a single line. It assumes that the true correspondence will be more nearly approximated by the two scores having the same rank than by the two scores of the same individual. On the basis of this curve the correlation may be calculated by a "deviation formula." Certain advantages over the product-moment and the "foot-rule" are pointed out. Kelley (18) gives a method for estimating the reliability of a combined record for two scores compared with the true ability determined by the average record of a large number of scores with tests of the type of the spelling scales. The use of the order of merit method in connection with correlation is so common that it is well to have reference to Thorndike's (43) method of combining incomplete judgments of relative position of N facts by N judges into one order of merit.

A mathematician, Grove (11), offers vigorously worded criticism of some correlation work of psychologists, although he points out no cautions which have not previously been noted, often by the men themselves. To those who continue to use Spearman's formula for correction of raw coefficients he says: "Spearman's plan of making very few observations and making hypothetical corrections on stated assumptions is a way that makes no appeal to a man who has the scientific method in his blood. To such juggling, the latter quietly shakes his head and *sotto voce* says 'Ignoramus'." At his colleagues Thorndike and Hollingworth, he hurls bolts of literary lightning which seem to hit only their shadows. As a summary of the cautions to be remembered the papers are admirable.

New Ways of Using Correlation.—By correlating the ranks of different motor learning problems, Pechstein (29) compares human and animal learning. "It shows that there is no royal road to mastery for the human not open to the rat." Doll (7) provides, probably for the first time, evidence that mental deficiency goes with low physical measurements. He avoids the usual error involved in comparing with a random group the feeble-minded who are selected from an undersized social class. He follows the plan of the biometric laboratory, which shows that greater degrees of deficiency correlate with greater decrease in physique. To the writer it seems that his series of coefficients may also indicate that physical measurements increase in their diagnostic value as they involve more nerve action. The partial correlations between mental ages and physique for constant chronological age are for deficient girls: weight .34, standing height .39, sitting height .47,

vital capacity .63, left grip .67, right grip .69. His correlations are somewhat affected by the use of the product-moment formula for units of percentiles and of mental ages. The effect of using unequal units upon the coefficients is a problem which psychologists should consider seriously as it is a too common practise. Doll recognizes the difficulty and offers one series of coefficients calculated from the original data to compare with percentile records, the two series showing fairly close agreement.

Petersen and Doll (**28**) reason inconclusively that the feeble-minded, although showing lower average records, do not have less *sensory capacity* for the lifted weight test at the same mental ages than the normal children, because the correlation between the test records and the mental ages is higher with normals than with deficients. Their argument assumes that normals have greater intellectual than sensory capacity at the same mental age. They should also show that they are justified in assuming that a correlation with mental age is the same as with chronological age for normal children. Baldwin (**1**) shows a correlation of .70 between height and early pubescence for ten girls of different height. This introduces correlation of developmental changes for the same individuals. Bonser (**3**) interprets lower correlations for opposites and mathematics tests among non-graduates, than among those who graduate from high or who leave high, to indicate a selective influence of the school. Young (**50**) finds striking sex differences between form board records and placing graduated cylinders, eyes open and closed. Thorndike (**42**) indicates the inadequacy of the Binet scale to test mechanical skill and its close relation to tests of ability to deal with ideas expressed in language. Pintner and Patterson (**31**) find by correlation of two tests a year apart that the average of three trials with the form board gives a more stable score than the best of three trials or other scores. McCall (**24**) finds improvement at a speed test is not as good a measure as the average of practise scores. King (**21**) demonstrates the changing relation between college marks with early and late trials of the same test. Correlation is used by King (**20**) to criticize the statements of Judd and others that rapid reading goes with good reading. Doll (**8**) finds that some of Woolley and Fisher's statements about correlations, apparently made from their graphs without calculating the coefficients, are not supported by the calculations.

Applications in New Fields.—The most notable increase in the use of the correlation method has been in applied psychology and

education. In business Scott (35) used the combined firm rank of employees as a standard with which tests frequently correlate better than ranks given by executives after long acquaintance. Terman (38) found that tests correlate highly with salaries of men applying for positions as firemen and policemen. Hollingworth's Vocational Psychology (16) is an admirable summary of correlation data in this field. New results are given for estimated abilities as judged from photographs and acquaintance. See also Jones (17) on tests for telegraphy, Wells (47) on typewriting, Trabue (45) and Whipple (48). In regard to tests of educational products Otis (27) studies spelling tests, Breed and Culp (4) handwriting, Richards and Davidson (32) reading, Wilson (49) addition. Guillet advocates correlation exercises for normal school students. Mead and Holley find (25) that marks in a general method course agree better with estimates of practice teaching than college marks in the subject taught. Thorndike (40) finds that estimates of their interests and abilities by college students on the basis of their memories of what these were in elementary school, high school, and college correlate high. For example, estimated interest and estimated ability in high school correlated .89, estimated interests in elementary and high school .66. "On the whole, I believe, that the correlations given above are approximately what an omniscient observer of those persons would have found." Heck (13) finds time spent on home study is unrelated to school marks. His description of the significance of the probable error of the coefficient of correlation confuses it with the deviation of a regression. Myers (26) finds a significant negative relation between time of perfect learning and time taken to recall. Bonser (3) correlates the records of fourth, fifth and sixth grade pupils in his reasoning tests with their high school marks. With this important data it is unfortunate that he uses the method of unlike signs which is so uncertain. He fails to give partial correlations which would eliminate extraneous factors of age grade, etc., more satisfactorily than his broad divisions.

Other Applications.—Negative correlations of desirable motor traits with intellectual measures are found by McCall (24), Stecher (37), and King (21). Those interested in correlations of various tests with each other, with school marks and with estimates should see Weidensall (46), McCall (24), Bell (2), Kitson (23), English (9), Guillet (12), King (22), and Stecher (37). The last found that no motor test gave a reliable positive correlation with mental

multiplication. Speed and accuracy in a speed test correlates positively, Thorndike (41).

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SPECIAL REVIEWS

Advertising and Its Mental Laws. H. F. ADAMS. New York: Macmillan, 1916. Pp. xi+333. $1.50.

The book is written in an easy, readable style. It contains considerable original experimental data upon nearly all the problems of the psychology of advertising, as well as frequent reference to the experimental work of others. It is written from the point of view of the student of psychology rather than the advertiser; but the psychological principles involved are developed in such a simple and clear manner that the advertising man should find it interesting and profitable.

Psychology, according to Adams, should be able to help the advertising man in two ways. In the first place it should aid him to understand himself and his strong points and his limitations. In the second place psychology should help him by giving him the various laws of the mental processes: how to get and hold the attention of the reader; how to arrange the advertisement so that it may be easily read; how to make a commodity remembered by those who read the advertisement; under what circumstances to use "reason why" copy and what kind of an argument is most likely to appeal; what are the desirable emotions to arouse and how to arouse them; and finally how to bring about the desired action on the part of the reader. The author then discusses briefly the facts of attention, memory, association and action in their relation to advertising. Advertisements are analyzed into their elements, such as position, size, type of appeal, pleasantness, surrounding material, etc., and the effect of each of these elements is investigated experimentally.

C. E. RAGSDALE

PRINCETON UNIVERSITY

The Science of Musical Sounds. D. C. MILLER. New York: Macmillan, 1916. Pp. viii+286.

The volume consists of eight lectures given at the Lowell Institute in 1914. The first lecture defines sound and discusses its physical nature. In the second we find a discussion of the characteristics of tone, and the method of determining pitch frequency and tone quality. The third treats of methods of recording and photographing sound waves, including a description of Miller's "phonodeik" which permits an optical registration of the wave for purposes of projection and photographing. Then follows in lecture IV a discussion of analysis and synthesis of harmonic curves, and a description of Miller's apparatus for analyzing curves secured by means of the phonodeik. Lecture V is concerned with the influence of the horn and diaphragm on sound waves, and the necessary corrections of the sound records secured by the phonodeik.

Lecture VI reports results obtained in analyzing the tone qualities of various musical instruments. The physical effects of generators and resonators on the resultant tone are carefully distinguished, while the influence of the material from which the instrument is made is demonstrated with special reference to organ pipes. It is shown that a zinc pipe with hollow walls whose dimensions are those of a wooden pipe giving the tone G_2, gives a tone, F_2, when the walls are empty, and a tone, E_2, when the walls are filled with water. The superiority of gold flutes, over those of wood or silver, is due to their thin, soft, flexible walls, which are nevertheless massive by reason of the density of the gold. The tuning fork is found to give a simple clang-like tone with an unperiodic partial. The flute has a relatively simple tone when blown softly, though it contains a weak octave and traces of higher partials. When played loudly it is over blown and the first overtone becomes the most prominent partial. The violin tone shows a characteristic prominence of the third, fourth and fifth partials. Since the lower tones have very weak fundamentals, the hearing of them is attributed to beat tones (difference tones?) of the higher partials. The oboe tone contains loud high partials; twelve or more are registered, of which the fourth and fifth predominate. The clarinet registers twenty or more partials, of which twelve are important, particularly the seventh and ninth. The horn gives the entire series of partials up to the thirtieth, with the fourth, fifth and sixth most evident. The piano is found to have many overtones for the lower strings. The author concludes that no

difference is introduced by the so-called "emotional touch" of the pianist, yet variations in tone quality may be attributed to combinations of tones struck at intervals of a few hundredths of a second. The artistic touch is therefore a matter of time variation as well as of strength of the blow. With this factor duly considered, mechanical piano players should be able to duplicate the best results of the most skilled artists.

Lecture VII considers the physical characteristics of vowels. The Helmholtz fixed pitch theory appears to be substantiated rather than the theory which attributes vowel sounds to constant ratios among the partials. The optimal regions of pitch for the various vowels are indicated by an ascending series: *moo*, 326; *mow*, 461; *maw*, 732; *ma*, 900 to 1,240. At this point a bifurcation ensues, in that the succeeding vowels show two dominant partials, one of which trends higher and the other lower. Although the lower is the more intensive, the higher is the characteristic, since its absence converts the vowel to one of the lower order. For *mat* the pitch values are given as 800 and 1,840; for *met*, 691 and 1,953; for *mate*, 488 and 2,461; for *meet*, 308 and 3,100. Whispered vowels were also analyzed and found to give similar optimal frequencies, though usually they were somewhat higher. The final lecture considers methods of securing synthetic vowels, and includes a discussion of the relation of the science and art of music. By a careful adjustment of organ pipes until each corresponded to the requisite amplitude of a partial in a voice curve, it was possible to produce a close approximation to a particular human vocalization. It is further noted that in the translation of song lyrics care should be taken to select vowels to accord with the pitch of the voice tone. Baritones have less difficulty than sopranos in singing vowels on any tone because of their lower register. It is, of course, impossible to produce the low vowels on high tones, but not so to produce any and all vowels on a low fundamental.

As regards certain discrepancies between Miller's vowel frequencies and those established by Köhler,[1] it may be noted that Miller analyzed the vowels as uttered in the natural voice of an American. As his results seem to indicate a gradual transition from one to the other, there is no need to assume that his particular values would be optimal for the vowel sounds of the German language. They would perhaps not be acceptable to all who use the English language.

ROBERT MORRIS OGDEN
CORNELL UNIVERSITY

[1] *Cf.* Summary on Hearing, PSYCHOL. BULL., 1911, 8, p. 97.

Analyzing Yourself. New York: Business Training Corporation, 1916. Pp. 138.

This little book is the first of twelve texts in a "Course in Business Essentials" planned to "cover a period of six months." The initial volume, as the reader is told, "is not an ordinary book to be read through at a sitting. It is in reality *an examination of yourself by yourself.*" The book, in fact, contains questionaries, notable for their concreteness and for the directness and simplicity of their phraseology, on the health, appearance, and temperament of the reader. It contains also directions enabling him to test his own observation, memory, ability to recognize faces, concentration, reasoning power, and range of information. Most of the tests are clever adaptations of experiments already known. The significance of the book largely, however, consists in the ingenious inclusion, within the covers of a small volume, of (1) all the material needed for the tests, (2) a key to the tests, and (3) directions for rating (in per cents) the outcome of each questionary and each test, and for combining the results graphically into a "simple chart, that sums up the whole story into Your Curve of Personality."

The writer of this notice beguiled a railroad journey by working through the tests and questionaries for herself and has since put the book into the hands of two people, one of them a boy of eighteen, wholly untrained in psychological methods. The result of this examination is the conviction not only that the book is likely to be useful to the young business man for whom it is primarily intended but that it bristles with suggestions for the teacher of elementary courses in psychology.

MARY WHITON CALKINS

WELLESLEY COLLEGE

The Dream Problem. A. E. MAEDER. (Trans. by F. M. HALLOCK and S. E. JELLIFFE.) Nerv. & Ment. Dis. Monograph, No. 22. New York: 1916. Pp. 43.

This paper was read at the Congress of the Psychoanalytical Society at Munich in September, 1913, and its primary aim is to answer objections made to a previous work wherein the writer, of the Zürich school, appears to have been misunderstood by his "Vienna colleagues," of the Freudian School. The thesis of the earlier paper, here restated and amplified, is that dreams show, upon analysis, not only a wish-fulfilment (pleasure principle), but a prophesy or foresight of the end toward which the dreamer (sub-

consciously) strives (reality principle). Dreams thus give "a clew to the direction which is suited to the reaction and strength of the patient in question." The typical Freudian interpretation of dream symbolism is accepted as a preliminary step in complete analysis, but, retrospective as it is, it omits the still greater significance of the latent dream: its "progressive side." "In the dream there is at work a preparatory arranging function which belongs to the work of adjustment." As an illustration of this point of view, Maeder, who long worked unsuccessfully in a chemical institute, now dreams repeatedly of making chemical analyses. He interprets these dreams not only, with Freud, as wish-fulfilments wherein the fruitful analyses of the dream compensate for the humiliations of his past failures, but finds further that they are a prophesy and index of his later actual success in *psycho-analyses!*

To psychoanalysis he ascribes the systematic introduction of genetic thinking into psychology, but affirms that this retrospective attitude alone cannot take us far. "A new field of work is now before us . . . the prospective road leads to reality; it promises us, therapeutically, the most important insight, just as the retrospective road once meant for us a great scientific gain . . . this gleam of light is to serve as a lighthouse" (sic!).

Thus do the psychoanalysts dispose of time! Our octopusian dreams not only drag up our yesterdays (buried with fond hopes of permanency), but twist their teleological tentacles into our tomorrows.

ELLIOTT PARK FROST

UNIVERSITY OF TENNESSEE

Honesty. W. HEALY. Indianapolis: Bobbs-Merrill, 1915. Pp. 220.

Healy embodies the conclusions drawn from hundreds of clinical cases involving juvenile dishonesty in a volume designed as a practical reference book for parents, teachers and social workers. The author purposely avoids the use of tiresome technicalities or theoretical discussions which might bore the lay reader, and after criticizing rather sharply the failure on the part of adults to appreciate the vital factors of childhood, points out the practicability of more thorough attempts at understanding and treatment, in chapters headed as follows: age of moral development, home conditions, companionship, discipline, amusement and adventure, habits, mental, physical and social, physical conditions, abnormal mentality correlated with stealing, and impulsions and obsessions.

A definite age of unmorality at about nine years, affirmed by Goddard and others, is denied, as is the influence of poverty toward dishonesty. Immoral homes, lack of healthy home interests, social temptations derived from the desire to be like one's school fellows, and the desire for thrilling adventure are all potent influences toward the habit of dishonesty. The school is arraigned, not only for its failure to provide healthy interests for children which will act as preventives, but for its positively harmful influence in forcing upon many weak but moral children the companionship of delinquents which of necessity leads them astray. Picture shows are held responsible to some extent for juvenile stealing; directly, in that petty thieving depicted on the screen is sometimes copied by the child in real life; indirectly, and this effect is much more frequent than the other, in that many children steal to provide themselves with funds wherewith to attend the "movies." Regulation of the attendance of children upon these and all other places of amusement is strongly urged upon community welfare organizations. Cases of stealing due to "gang influences" can only be dealt with by complete severance of all ties of association with the old environment and companions. Individual cases may sometimes be helped by sharp discipline, if taken early enough, and quick corporal punishment is often most effective. Great care must be exercised in such cases, and unless one understands the individual, and can punish intelligently, the case is best let alone. Where the stealing is the result of early obsessions, or of impulsions, or of sexual practices secretly indulged in or repressed, treatment should be prescribed by a trained "medicopsychologist," and his efforts must be intelligently and consciously seconded by parents or guardians if successful results are to be attained.

Throughout the whole volume is emphasized the necessity for sympathetic, individualistic study of each case instead of the treatment of offenders *en masse*.

HELEN B. HUBBERT

RANDOLPH MACON WOMAN'S COLLEGE

BOOKS RECEIVED

BOIRAC, E. *L'Avenir des Sciences Psychiques.* Paris: Alcan, 1917. Pp. 301. 5 Fr.

FERRI, E. *Criminal Sociology.* (Trans. by J. I. Kelley & J. Lisle; ed. by W. M. Smithers; introd. by C. E. Ellwood & Q. A. Myers.) Boston: Little. Brown, 1917. Pp. xlv + 577. $5.00

PAPILLAUT, G. *Science français—Scolastique allemand.* Paris: Alcan, 1917. Pp. 154. 2.50 Fr.

NOTES AND NEWS

PROFESSOR R. P. ANGIER has been promoted to a professorship in psychology at Yale University.

PROFESSOR R. M. YERKES, of Harvard University, has been appointed professor of psychology and director of the psychological laboratory at the University of Minnesota.

A MENTAL HYGIENE CLINIC has been opened at the San Francisco Polyclinic, with Professor Lillien J. Martin as psychopathologist. The aims of the new clinic are to deal with the mental hygiene of the mentally well and ill, of all kinds and ages.

THE NATIONAL RESEARCH COUNCIL has appointed the following committee on psychology: J. McKeen Cattell (Columbia University); Raymond Dodge (Wesleyan University); Shepherd Ivory Franz (Government Hospital for the Insane); G. Stanley Hall (Clark University); C. E. Seashore (University of Iowa); E. L. Thorndike (Teachers College, Columbia University); John B. Watson (Johns Hopkins University); G. M. Whipple (University of Illinois); R. M. Yerkes (Harvard University), Chairman.

PROFESSOR S. W. FERNBERGER, of Clark University, has been accepted for, and is now in training at, the Officers' Reserve Camp, at Plattsburg, N. Y.

THE following items have been taken from the press:

PROFESSOR J. B. PRATT, of Williams College, has been appointed Mark Hopkins Professor of Intellectual and Moral Philosophy at that institution.

PROFESSOR W. F. DEARBORN has been promoted to a full professorship at Harvard University.

PROFESSOR E. L. THORNDIKE, of Teachers College, Columbia University, has been elected a member of the National Academy of Sciences.

DR. PIERRE MARIE has been appointed to the chair of clinical neurology at the University of Paris, to succeed the late Professor Dejerine. Marie's recent work on the revision of the doctrine of aphasia has been of special interest to psychologists.